

**Summer Training at
Kokilaben Dhirubhai Ambani Hospital & Medical Research Institute,
Mumbai
(April 3 to June 2, 2017)**

DMAIC Approach to Reduce Non-Productive Time in Operation Theatre

**By
Poulami Paul**

**Under the guidance of
Dr. Sandesh Kumar Sharma**

**MBA Hospital & Health Management
2016-2018**


**Institute of Health Management Research
The IIHMR University, Jaipur
2017**

CERTIFICATE

This is to certify that **Ms Poulami Paul** has undergone summer training in **Kokilaben Dhirubhai Ambani Hospital, Mumbai** from **3rd April to 2nd June 2017**.

The candidate herself completed the project assign to her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish her success in all her future endeavors.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affair)

The IIHMR University, Jaipur



Dr. Sandesh Kumar Sharma

Associate Professor

The IIHMR University, Jaipur

02nd June 2017

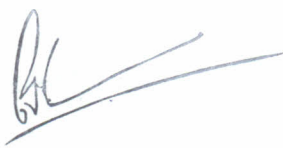
To whomsoever it may concern

This is to certify Ms. Poulami Paul from IIHMR Jaipur has successfully completed an internship with the clinical administration department at Kokilaben Dhirubhai Ambani Hospital from 01/04/2017 to 02/06/2017.

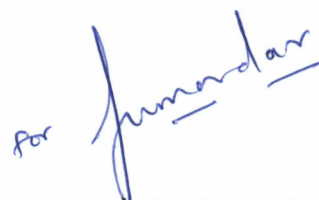
During her tenure, she has worked on the following projects:

- "Reducing Non Productive Time in the Operation Theatre using Six Sigma Principles"
- "Study of Turn Around Time of CT Department"

Her performance was satisfactory and we wish her success in her future endeavors.



Dr Ram Narain
Executive Director



Dr. Milind Khadke
GM (Clinical Administration)

ACKNOWLEDGEMENT

With immense pleasure, I express my heart full gratitude to the Chairman of IIHMR Jaipur, Dr. S.D. Gupta, President Dr. Vivek Bhandari and Dean Dr. Ashok Kaushik, and my mentor Dr. Sandesh Sharma for having given me this opportunity to undergo training.

I am extremely indebted to all the professionals at Kokilaben Dhirubhai Ambani Hospital (KDAH) for sharing generously their knowledge and precious time, which inspired me to do the best during summer training. I owe a great debt to chief executive officer (KDAH) for providing me an opportunity to work as a trainee in their organization. I would like to thanks Dr. Ram Narain(Executive Director) and Dr. Milind Khadke General Manager (Clinical Administration) our mentor Dr. Nilesh Gumardar , Executive (Clinical Administration) for the summer training in KDAH, without their help it would not have been possible for me to understand the hospital to the extent as I have now. I am highly grateful to all the staff of Operation Theatre for cooperation, which enabled me to complete my special assignment in the department.

I am also grateful to all the department heads and staffs for giving me time in spite of their hectic schedule. Without their active cooperation and participation, it would not have been possible to accomplish my task.

POULAMI PAUL

MBA- HM 21

IIHMR UNIVERSITY JAIPUR

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Acronyms/Abbreviations:

A&E- Accident and Emergency

DAMA-Discharge Against Medical Advice

HCA-Health Care Assistant

ALOS-Average length Of Stay

CMD-Chief Medical Director

COO-Chief Operating Officer

CGHS-Central Government Health Scheme

CSSD-Central Sterile and Supply Department

CT-Computerized Tomography

ECG-Electro Cardiogram

TMT-Trade Mill Test

EEG-Electro Encephalography

EMG-Electro Myography

HOD-Head of Department

HRD-Human Resources Department

ICU-Intensive Care Unit

SICU-Surgical Intensive Care Unit

MICU-Medical Intensive Care Unit

HDU-High Dependency Unit

PICU-Pediatric Intensive Care Unit

NICU-Neonatal Intensive Care Unit

IPD- In-Patient Department

KDAH-Kokilaben Dhirubhai Ambani Hospital

MRD-Medical Records Department

About Summer Training

The Master in hospital and health management (MBAHM) Program of Institute of Health Management Research (IIHMR) aims at preparing professionally trained managers of health care organization and hospitals to meet the increasing need for managerial skill. It involves an eight-week summer placement for the first year students to provide them with a firsthand experience of the hospital system or environment. As a part of the program, I had privilege to undergo my practical training at Kokilaben Dhirubhai Ambani Hospital, Mumbai to get a firsthand Knowledge and Experience about the functioning of the hospital. I worked all through under the Clinical administration there from 1st April 2016 to 31st May 2016. The main aim of the summer training was to get exposed to operation of all the hospital in general, and an in –depth insight of the Intensive Care unit & Admission Department in the hospital in particular.

Objective:

The summer training program had the following Objectives:

- To have a basic orientation of the hospital set up.
- To study the functioning of the hospital as a system and its departments as subsystems of the hospital.
- To observe the entire department in terms of their location, work planned Staffing pattern.
- To Study about staffing pattern and job responsibility of staff.
- Doing a project, this is helpful to me in understanding hospital working in a better way and to the organization.

PROFILE OF KOKILABEN DHIRUBHAI AMBANI HOSPITAL

The Institution

Kokilaben Dhirubhai Ambani Hospital and Medical Research is India's newest most advanced tertiary care facility. As the flagship social initiative of Anil Dhirubhai Ambani group, it is designed to raise India's global standing as a health care hub, with emphasis on excellence in clinical services, diagnostic facilities and research.

A vision to strengthen healthcare in the communities we serve and empower patients to make patients to make informed choices was at the genesis of Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute.

Inaugurated in January 2009, the hospital is significant CSR initiative from Reliance Anil Dhirubhai Ambani group. It is designed to raise India global standing as a healthcare hub, with emphasis on excellence in clinical services, diagnostic facilities and research activities.

It is the only hospital in Mumbai to function with a FULL TIME SPECIALIST SYSYTEM that ensures the availability and assess to the best medical talent around-the-clock. The 750-bed hospital has 103 full time doctors, 520 nurses and about 200 paramedical and growing.

It represents the confluence of top-notch talent, innovative technology state of art infrastructure and most important, commitment. KDAH offers doctor's innovative diagnostic and surgical solutions as well as the same in IT systems. In many cases, they represent the first of their kind in the region.

KDAH is fully geared in terms of talent, technology structure and spirit-to-reshape perceptions regarding hospitals and redefine the concept of caring. Indeed, this globally benchmarked institution marks the beginning of a new era in Indian healthcare.

VISION

We aim to be a global healthcare institution that combines the best in medical treatment with strong ethical principles and a culture of care and compassion.

VALUES

Integrity: To deal with all stakeholders –patients, partners, employees, vendors and the community – in a spirit of fairness and integrity.

Transparency: To respect the patient’s right to know at every touch point by providing information that is clear, concise relevant and easy to understand.

Maximum Care: To re-evaluate every hospital system, process and procedure to ensure the patients and their loved ones receive maximum care and comfort.

Self – improvement: To instill a process of learning and self – improvement at every level through continuous training, focused research and peer review.

Patient Dignity: To safeguard the dignity of patients by protecting their individuality and privacy at all times.

KEY STATISTICS OF HOSPITAL:

Encompassing 10-lakh sq. ft. Of space spread over 17 floors and 2 basements. Its intelligent framework allows hospital staff to optimize utilization of space and resources.

Accommodates over 750 in – Patient beds, allows optimal utilization of resources and ensures privacy, dignity, comfort, convenience and the best healthcare to every patient. However, the smooth and seamless movement of people & staff guaranteed.

Critical care unit is the largest number of critical care beds in Mumbai, with 130 ICU beds. Special technical features in ICU including ceiling mounted, dual arm pendants, which ensure that the space around the patient is not cluttered. Another unique feature is dedicated air supply that keeps the critical care free of any kind of contamination and infection.

It has over 140 full time consulting clinics with the capacity to handle over 6000 outpatients consulting every day.

Movements in the hospital is managed by 30 elevators – largest elevator bank for any hospital in India capable of transporting 7500 persons per hour, with different elevators for inpatients , outpatients, staff and catering.

The Hospital’s laboratory is housed on a single floor over an area of over 40,000 sqft offers over 3000 routine and highly advanced diagnostics, genetic and molecular biology test and will serve as a referral centre for second opinions.

UNIQUE IN INDIA

Encompassing 10 lakh sq.ft of space spread over 17 floors and two basements. Its intelligent framework allows hospital staff to optimize utilization of space and resources.

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UNIQUE IN MUMBAI

Mumbai's first slice PET CT Scanner that combines computed tomography and positron emission tomography technologies into a single machine.

140 ICU beds, largest number of critical care beds in Mumbai.

Hospital's laboratory housed on single floors spread over an area of over 40,000 sq. ft. It offers over 3000 routine and highly advanced diagnostics, genetic and molecular biology tests.

Hospital is having Mumbai's largest OT complex with 22 operating theatres.

Largest Dialysis centre in Mumbai.

Full – time Specialist System: All doctors are attached and available only at Kokilaben Hospital.

Level 1 Accident and emergency Center.

HOSPITAL INFRASTRUCTURE

1. Lower Basement

- Biomedical Engineering
- CSSD
- Nuclear medicine
- PET CT
- Radiation Oncology
- SRS

2. Upper Basement

- Car Parking
- Central Security Office
- Mortuary.

3. Ground Floor

- Main Reception
- Admission counter
- Discharge and billing
- Pharmacy & Medical mall
- Gift Shop
- Prayer hall
- Business Centre
- Fine dining
- Food court
- ATM
- Central report collection centre
- Beauty Salon
- Accident and Emergency.

4. Mezzanine Floor

- Administration
- Library
- Staff dining

5. First Floor

- Clinical administration
- Radiology & Imaging (X-Ray ,MRI ,ultrasound ,CT scan)
- Health Checkup program
- Sample Collection
- Centre for cardiac Sciences
- Centre for bone and joint
- Centre for pulmonary and lung medicine
- Multi-Specialty OPD

6. Second Floor

- Centre for children
- Centre for brain and nervous centre
- Dental clinic
- Centre for cancer
- Ophthalmology Clinic
- ENT Clinic
- Gastroenterology Clinic
- Dialysis Centre
- Blood bank
- Urology Clinic
- Nephrology Clinic

7. Third Floor

- OT complex 1 (8 theatres)
- Catheterization lab
- ICU (Neuro and Surgical)
- Interventional Radiology

8. Fourth Floor

9. Fifth Floor

- Ambulatory Surgery
- Day Surgery
- ICU(Cardiac)
- OT complex 2 (7 theatre)
- Refuge Area

10. Sixth Floor

- Rehabilitation Centre
- Convention and Exhibition Centre

11. Seventh Floor

- IVF Centre
- Cosmetology and aesthetic Surgery
- Laboratory medicine and pathology
- Nursing College
- Tissue and bone bank

12. Eighth Floor

- Birthing Complex (Labour and delivery)
- ICU (Pediatric and Neonatal)
- Birthing suites
- OT (Obstetric)
- Wards

13. Ninth Floor

- Inpatients (Pediatric)

14. Tenth Floor

- High Dependency Unit
- ICU (Medical)
- Refuge area

15. Eleventh Floor

- General ward
- Nursing College

15. twelfth To Sixteenth Floor

- Inpatient.

DEPARTMENTS IN THE HOSPITAL

The following departments function in the hospital:

Clinical Services	Clinical support services	Clinical Administrative services	Administrative Services
Accident & Emergency	Laboratory Medicine	Ambulance Services	Human resources
OPD	Imaging	Nursing department	Materials
Anesthesia	CSSD	Food & Beverages	Marketing
Critical Care	Biomedical Waste	Security	Finance
OT	Housekeeping	Mortuary	Engineering
IPD	Pharmacy	Laundry	IT

CLINICAL SERVICES

ACCIDENT & EMERGENCY

An Emergency Department (ED) is also known as Accident & Emergency (A & E), Emergency Room (ER), Emergency Ward (EW), or Casualty Department is a medical treatment facility, specializing in acute care of patients who present without prior appointment, either by their own means or by ambulance. Due to the unplanned nature of patient attendance, the department must provide initial treatment for a broad spectrum of illness and injuries, some of which may be life threatening and require immediate attention.

Layout

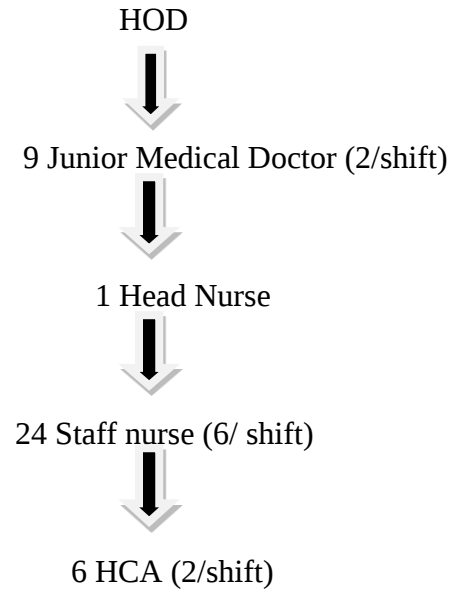
- 11 bedded (6+3 triage + 2 isolation)
- Each bed is separated with curtains to maintain patient privacy and is equipped with the following:
 - ✓ Oxygen supply
 - ✓ Suction pump
 - ✓ Syringe pump
 - ✓ Cardiac monitor

Minor Operation Theatre

- Machines in minor OT are as follows:-
 - ✓ Anesthesia machine
 - ✓ ETCO2 machine
 - ✓ Cautery machine
 - ✓ OT table
- Procedure done in minor OT
 - ✓ Lumbar puncture
 - ✓ Biopsy
 - ✓ Bone marrow aspiration
 - ✓ Suturing

This department has its own billing and discharge counter.

Staffs:-



Equipment

- Defibrillator-2
- Portable ECG-2
- Nebulization machine -2
- Portable sonography machine -1
- Trolleys:
 - ✓ Procedure trolley
 - ✓ Induction trolley
 - ✓ Adult crash trolley
 - ✓ Dressing trolley

Ambulance

There are 2 types of ambulance:

- a) Non-cardiac ambulance
- b) Cardiac ambulance

Equipment in the ambulance are as follows: -

- Ambulance set
 - Portable ventilator (cardiac ambulance)
 - Portable oxygen unit
 - Portable suction unit
 - First aid kit
 - Traction splint
 - Auxiliary stretcher
 - Transfer sheet
 - Airways (nasal, or pharyngeal)
 - Obstetrical kit
 - Sphygmomanometer
 - Stethoscope
 - Fire extinguisher
 - Burn kit
 - Others
 - ✓ Sterile and non-sterile gloves
 - ✓ Face mask
 - ✓ Blankets
 - ✓ Towels
 - ✓ Bed pan
 - ✓ Tongue depressors
 - ✓ Cold packs instant chemical type
-
- 1 HCA in non-cardiac ambulance
 - 1 HCA + 1 nurse + 1 cardiac consultant in cardiac ambulance

OUTPATIENT DEPARTMENT

Kokilaben Dhirubhai Ambani Hospital has 140 independent consultant clinics with a capacity to handle over 6000 outpatient consultation every day. These clinics are organized as functional clusters representing a specialty, with each cluster containing its own examination room, phlebotomy room, and in instances, rooms for specialized medical equipment unique to the cluster. A day care dialysis unit, an endoscopy theatre complex, radiology suites and a blood bank support outpatient service are co-located on the same floors as the self-contained outpatient area. The hospital outpatient services offer specialist consultation services across 42 different specialties including six centers of excellence.

The six centre of excellence are as follows:-

- Centre for neurosciences
- Centre for cancer
- Centre for physical medicine and rehabilitation
- Centre for cardiac sciences
- Centre for bone and joint
- Centre for children

The specialists included are Anesthesiologist, Critical Care Medical, accident and emergency, gynecology and obstetrics, imaging, laboratory medicine and pathology including biochemistry, molecular biology, hematology, histopathology, microbiology, clinical pathology, transfusion, medicine, rheumatology, geriatric medicine, surgery including dentistry, ENT, general surgery, ophthalmology, plastic and reconstructive surgery, urology, surgical oncology, cosmetology.

A) Access to OPD services:

All patients who visit KDAH or free OPD for the first time for consultation/ other services are issued a card, which gives each patient a UHID number. This UHID card is attached to the registration form. With the help of this number, medical records of patients can be assessed. Allotment and control of UHID number is the responsibility of the admission staff desk.

B) OPD Appointment:

Appointments can be fixed over telephone to all from the call centre or personally across the reception counter. Fax and email facilities are also available.

Following services are offered in the OPD.

- Medical/ surgical consultations
- Preventive health check-up packages
- Laboratory investigations
- Imaging services

- Cardiology investigations
- Neurology investigations
- Pulmonary investigations
- Pain management
- AKD
- Gamma knife
- Endoscopy
- Bronchoscopy
- Urodynamic study
- Physiotherapy
- CDC
- ENT
- Ophthalmology
- Dental procedures
- Oncology
- Radiation oncology

HEALTH CHECK UP

- The executive checkup department, a part of OPD services, is a wing of this multispecialty hospital dedicated to the diagnostic and preventive side of patient care. It is a place where healthy patients come for prognosis of disease or to know about the preventive and curative aspect of conditions they may already have.
- This system facilitates the patient to get all the required investigations/ consultations done without having to pay for either consultation and/or for each individual item of pathological or imaging investigations. It is the centre point where the potential customers come directly in contact with hospital services. This department can therefore be a point to draw in patients to become in-patients or for them to come even for follow-up OPD consultation.
- The packages in the program have been developed by a team of highly qualified and experienced medical personnel and are designed to offer a complete medical checkup and within their limitations detect any latent health problems. In addition, these packages are offered at special discounted rates that make them truly worthwhile. At the end of the day, candidates leave the hospital with all their reports.
- This department is dependent on various other hospital departments and consultants to ensure a smooth process flow. Therefore, co-ordination is a key factor in smoothly running the department. The departments in co-ordination are, pathology, radiology, following department, medicine, surgery and gynecology.

OPERATION THEATRE:

The aim of department of anesthesiology and OT facility is to provide the highest quality of care to patients undergoing various types of surgeries. The OT facility is positioned as a tertiary care centre of excellence providing complete services for various surgical specialties. The department is staffed with highly experienced and trained anesthesiologist, surgeons, technicians, nurses and other support staff. Their services have state of the art technology and equipment with highest-level environment and quality controls. For each OT there are two scrub nurses and one circulating nurse. Protocols based on approach for quality pre-operative, intra- operative and post-operative and follow-up care of the patients. The complex is divided into three zones: sterile, semi sterile and non-sterile zones. Complete services to the following surgical specialties are provided.

- Cardiac surgery
- Neuro surgery
- Onco surgery
- Orthopedic surgery
- General surgery
- Gynecology and obstetrics surgery
- Pediatric surgery
- GI surgery
- Uro surgery
- Plastic surgery
- Ophthalmic and ENT surgery
- Transplantation surgeries

The OT complex has a pre and post-operative monitoring room for continuous monitoring of patients. The facility includes 22 OTs, 600 square feet area, pendants in all OTs and surgical control panels.

IN PATIENT DEPARTMENT

The IPD provides the detailed pre-procedure needs their completion and coordination with the diagnostic to arrive at the diagnosis and completion of treatment regimens, comprehensive care in the pre-operative and follow-up care, rehabilitative, and nutritional regimented their scientific amalgamation as per the progressive patient care need. IPD wards are located on floor numbers 9,10,11,12, 13, 14, 15 & 16. The IPD rooms are of the following types: single room, twin sharing, deluxe room and suites. Each floor has three zones, east, west and central and each wing has a separate nursing station. The various types of rooms with their features as follows:

- **GENERAL WARDS**
 - 5 beds/room
 - Air conditioned
 - Bed heads panels with medical gases
 - Nurse call systems with two way communication
- **SINGLE ROOMS**
 - Area of 320 sq. ft.
 - Separate patient zone and attendant zone
 - Nurses call system with two-way communication.
- **TWIN SHARING**
 - Bed head panels with medical gasses
 - Television sets
 - Couch for each patient relative
 - Nurses call system with two-way communication.
- **SUITS**
 - Area of 750 sq. ft.
 - Terrace garden
 - Exclusive visitor area and guest rooms
 - Nurses call system with two-way communication.

Nurse bed ratio is 1:5 for general ward, 1:2 for single rooms, 1:3 for twin sharing, 1:1 for suits. The various other rooms are clean utility, dirty utility, janitor room, AHU (air handling unit), sluice room, pharmacy room, and I.T. room and service elevator

INTENSIVE CARE UNIT:

The ICU cater to patients with most severe and life threatening illnesses and injuries requiring constant close monitoring and support from specialist equipment and medication to ensure normal bodily functions. There is adult ICU consisting SICU & MICU, pediatric ICU, neonatal ICU, transplant ICU and pediatric cardiac ICU. The nurse patient ratio for critical patients is 1:1 and for stable patients is 1:2. The ICU coordinates with CSSD, Laboratory and the radiology department, strict aseptic techniques are used. Pressure zones are created to control infection rate

THE ICU HAS HIGHLY DEDICATED AND TRAINED MEDICAL, NURSING AND ALLIED STAFF. THERE IS A SYSTEM OF CLOSED ICU IN KDAH. THE SPACE PER BED IS 320SQ FEET IN THE PATIENT CARE AREA

BED CAPACITY IN EACH ICU

ICU	Bed capacity
SICU1	11
SICU2	10
PCICU	11
PCICU-HDU	2
PICU	7
TRANSPLANT ICU	7
NICU	8
NICU-HDU	5
MICU	28
MICU	25

Human resource of the ICU

Intensive care doctors

- 1chief intensivist for all ICU
- Junior consultants(**12 hour shift**)
- Clinical registrars (8 hour shift)

Intensive care nursing staff

- 1 director general manager for ICU
- Nurse in charge (8 hour shift)
- Team leader (8 hour shift)
- Senior nurse officers
- Junior nurse officers

Allied staff

- Physiotherapists
- Dieticians
- Biomedical engineers
- Health care assistants

SHIFT TIMINGS:**For doctors**

Morning: 8am – 4pm

Afternoon: 2pm – 10pm

Evening: 10pm – 8am

Overlapping hours: 2pm – 4pm

For nurses, HCA and housekeeping staff

Morning: 7am – 3pm

Evening: 3pm – 11pm

Afternoon: 11pm – 7am

Visiting hours: 11am – 1pm

5pm – 7pm

Only 1 relative at a time is allowed

Records and registers

Admission and discharge register

Handling and taking over/team leader sheet

Assignment sheet

Leave book

OT booking register

Critical care flow sheet

Narcotic drug register

EQUIPMENTS:

MONITORING EQUIPMENT	CARDIOVASCULAR THERAPY	RESPIRATORY THERAPY	LABORATORY EQUIPMENT
Bed side and central monitors	CPR Trolley	Ventilators	Blood gas analyzer
ECG recorder	Defibrillators	Incubation / tracheotomy trolley	Electrolyte analyzer
Pulse oximeter	Infusion pumps and syringes	Nebulizers	
Spiro meter			
ECG monitor			
Temperature monitors			
Blood glucose meter			

Miscellaneous equipment

- Crash cart
- Dressing trolley
- Procedure trolley

Management information system

ICU	LOS (days)
Adult ICU	4
PCICU	6.5
PICU	5.6
NICU	6.4

PAEDIATRIC INTENSIVE CARE UNIT

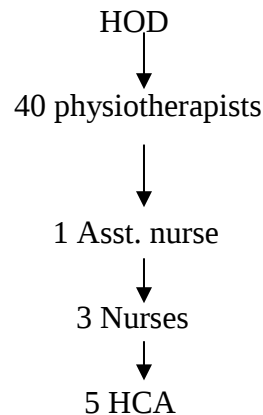
The PICU looks after all critical pediatric patients. It is located on 8th floor. The ICU is split into 2 zones for outpatients and inpatients. The various other rooms include Anteroom, equipment room, clean utility and dirty utility room. The average length of stay of each patient is approximately 1 week.

NEONATAL INTENSIVE CARE UNIT

The NICU is 18 bedded and located on 8th floor. The department is divided into 2 zones outpatients and inpatients. There are 2 isolation rooms. The nurse ratio is 1:1.

CENTER FOR REHABILITATION:-

- The center is located on the dedicated floor with 30000 square feet area and exclusive inpatient service, first of its kind.
- The department is located in 7th and 8th floor of hospital.
- It has its own billing desk.
- It also consists of a day-care center for those patients who need 4-5 sessions in a day.
- **Staff of the department consists of :**



Following therapy services are available:-

1. Neurological Rehabilitation
2. Musculoskeletal Rehabilitation
3. Cardiac Rehabilitation
4. Pulmonary Rehabilitation
5. Pediatric Rehabilitation
6. Cancer Rehabilitation
7. Pain management
8. Women's health
9. Geriatric Rehabilitation

The therapy services offered in the department:-

1. Physical therapy
2. Occupational therapy
- 3 Electrotherapy
4. Speech and language pathology
5. Exercise physiology
6. Psychology
7. Rehabilitation nursing
- 8 .Orthotic and prosthesis

IVF CENTRE:-

- Centre for reproductive endocrinology and fertility (CREF) is located on the 7th floor of the hospital and has dedicated space for out-patient care and day care of patients with infertility and reproductive endocrine problems and for medical acupuncture and mind body program.
- CREF is staffed by full time consultant reproductive endocrinologist and infertility specialist, embryologist and infertility issues and a health care assistant.
- A full-fledged laboratory and radiology department offering a comprehensive range of tests including some newer cutting edge tests under one roof only compliments our services at CREF, but is also extremely convenient for patients.
- Medical conditions addressed at CREF:
 - ✓ Reproductive endocrinology
 - ✓ Midlife health care
 - ✓ Bone health
 - ✓ Adolescent gynecology
 - ✓ **Infertility treatment**
 - ❖ Fertility drugs to induce/ enhance ovulation(pills or injections)
 - ❖ Intrauterine insemination
 - ❖ Assisted reproductive therapy(ART) procedures:
 - In vitro fertilization (IVF)
 - Intracytoplasmic sperm injection(ICSI)
 - Assisted hatching(AH)

- Blastocyst transfer
- Pre-implantation genetic diagnosis(PGD)
- Embryo cryopreservation
- Sperm cryopreservation
- Testicular tissue cryopreservation
- Third party reproduction
 - Donor oocytes
 - Donor sperm
 - Gestational surrogacy
 - Donated embryos

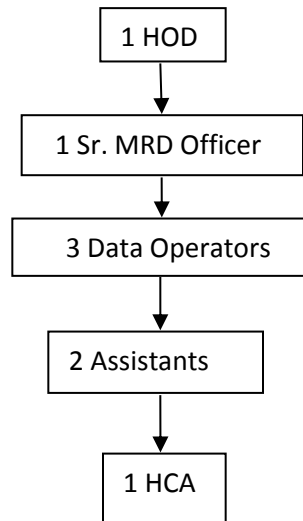
Other facility:-

- ✓ Diagnostic tests
- ✓ Billing and registration
- ✓ Phlebotomy services
- ✓ Ultrasound facilities
- ✓ Andragogy and embryology laboratories
- ✓ Operating room,pre-op and recovery room facilities
- ✓ Counseling and support services

CLINICAL SUPPORT SERVICES

MEDICAL RECORDS DEPARTMENT

- The main functions of the department are:
 - 1) Storing file for future reference.
 - 2) Research
- Staff



- Open and closed audit is done of all files before keeping them for storage.
- The arrangement of files is done in following ways:
 - ✓ Year wise and UHID wise
 - ✓ Also on the basis of their type:
 - a. Regular files
 - b. DAMA files
 - c. MLC files
 - d. OT recovery files
 - e. Chemotherapy files
 - f. Dialysis files
- Apart from files few forms and records are also store in this department:
 - ✓ Consent forms
 - ✓ OT papers
 - ✓ A&E Papers
- Certificates issued from the department:
 - ✓ Patient fitness certificate
 - ✓ Fit to fly certificate
 - ✓ Leave certificate

- All files are stored in the department for the following time-period:
 - ✓ Report-1.5 year
 - ✓ Death, DAMA and MLC files 20 years
 - ✓ Regular files-5years
- ICD-10 coding is done for storing files:
 - ✓ Red-Death, DAMA, MLC
 - ✓ Black-Oncology
 - ✓ Yellow-Gynecology, & obstetrics, IVF files
 - ✓ Dark blue- general medicine, critical care, Nephrology, Endocrinology, Gastroenterology, Pulmonary medicine, Dermatology, Dental, Psychiatry, rehabilitation, Rheumatology.
 - ✓ Light blue- Pediatrics
 - ✓ Orange- Neurology, CVTS, Cardiology, Orthopedics.
 - ✓ Green- ENT, general surgery, ophthalmology, Urology, Cosmetology, Interventional radiology.
- This department has to notify Bombay Municipal Corporation (BMC) about following things on regular basis:
 - ✓ About Birth & Death report (once in a week)
 - ✓ Notifiable diseases which includes cholera, dengue, plague, yellow fever, TB, polio, meningococcal meningitis, leptospirosis, viral encephalitis (once in a week).
 - ✓ Maternal mortality (once in a week)
 - ✓ MTP & PNDT (once in a month)
 - ✓ Retrieval- for easy retrieval of files tracer cards are used when files are given to patients or sent outside the department.

LABORATORY:-

The salient features of the department are as follows-

- CAP(College of American Pathology)accreditation
- Central processing laboratory is spread over 40,000sq.Ft. which follows strict internal quality compliance for all analyzer.
- Excellent laboratory management system which handles both pre-analytical and post-analytical aspects
- Dedicated courier and logistic services
- 24 hrs. sample collection facility
- Stringent quality control monitoring which satisfy the quality assurance elements elaborated by GLP and GCP and readily available documented evidence of quality assurance and quality proficiency schemes
- Constant improvisation and technology innovation using over 150 states of the art equipment.
- Quality control and quality assurance executive that monitors pre-analytical and post-analytical processing of the samples.
- Customized management report (MIS-management information system)
- An active IRB and ethics committee, which oversee clinical trials, proposed when required.

BLOOD BANK:-

Transfusion medicine is a multi-disiplinary area concerned use of blood and blood component in the treatment of human disease. The mission of KDAH is to make available appropriate adequate quantity and high quality of safe blood and blood component to “anyone, anytime, anywhere” in medical community. KDAH adheres to quality norms and focus on the donor satisfaction standards and technique and quality control are precisely and meticulously maintained as per norms given in the drugs and cosmetics acts, by the regulatory authority, director drug controller (India), ministry of health and family welfare, Govt. of India, and also internationally recommended methods. The department runs round the clock and blood and its products are supplied as and when requested. Blood donation is accepted from voluntary blood donors, relatives, and friends of the patient. Autologous blood donation (blood donation from one’s own use) is also accepted. The blood donors are informed and educated about the infection transmitted by transfusion of blood components. All the mandatory screening for the transfusion transmissible disease like HIV, HBV and HCV is done with the more sensitive and specific CMLIA and ELISA methods. All units are screened for VDRL and malaria parasite. Red cells in an additive solution (RCA) like, SAGM or ADSOL is a product, which is used in variety of indication like surgeries, anemia, trauma, childbirth etc. as a thumb rule one unit would increase the hemoglobin by 1 gm.%.

IMAGING:-

The imaging department consists of radiology services. The investigation performed in these departments includes:

- CT Scan
- MRI
- X-RAY
- Ultrasound
- Mammography

The HIS has a system for appointment scheduling for each of these investigations. The appointments are given by Call Centre. There are 4 X-ray machines, 5 ultrasonography machines, 1 mammography machine, 1 CT Scan machine, & 2 MRI machine of which one is 3 Tesla located in the radiology department and the other is 1.5 Tesla IMRIS (intraoperative magnetic resonance imaging suit) is a movable machine attached to the ceiling that is located in the OT. It is used for MRI scanning during a surgery. They are working on its complete utilization.

CENTRAL STERILE SUPPLY DEPARTMENT:-

The central sterile supply department (CSSD) plays a key role in providing the items required to deliver quality patient care. Centralizing the reprocessing of reusable devices helps ensure uniform standards of practice, while also providing for improved workflow (soiled, to clean, to sterile). This also facilitates the training and education of skilled technicians who must be aware about the standards, complexities, challenges, risks and technicians associated with the CSSD function. Every CSSD task must be performed for the welfare and safety of patients, co-workers and the community.

CSSD is the heart of hospital infection control and the most important unit of clinical support services. CSSD's main functions are cleaning and drying, assembly, packing, sterilizing, storing and distributing instruments (both multi use and single use devices), as per well delineated protocols and standardized procedures.

INFRASTRUCTURE:-

It is divided into 3 zones

1. Decontamination area
2. Assembly area
3. Sterile storage area

STAFF:-

- 1 manager/department head
- 1 executive
- 1 senior technical officer
- 4 technical officers
- 6 junior technical officers
- 10 trainees
- 16 health care attendants

MAJOR TECHNOLOGIES:-

- Ultra sonic cleaner
- Washer disinfectant
- Dryer
- Steam sterilizers
- Plasma sterilizers
- ETO (ethylene oxide gas sterilizer)
- Dry heat sterilizer

RECORD MAINTAINED-

- Manual issue and receiving OT
- Manual issue and receiving all departments
- Sterilization records

PHARMACY:-

Central pharmacy indents to IP, OP and LB. it is of 2 categories: capital and consumables.

SCOPE OF INVENTORY MANAGEMNET:

- INDENTATION
- RECEIVING
- STORING
- DISTRIBUTION

The staff consists of-

- 5 manager
- 1 executive
- 8 senior officers
- 24 officers
- 7 junior officers
- 6 trainee assistant
- 1 trainee HCA
- 16 attendants
- 21 HCA

HOUSE KEEPING:

The objective of housekeeping is exceptional standards of cleanliness, sanitation and hygiene of the entire hospital. Housekeeping services are outsourced to ARA MARK services

The staffs include-

- Housekeeping manager
- Assistant manager
- Housekeeping executives
- Supervisors
- Houseboys & house girls

Functions of housekeeping department are

- General facility cleaning
 - ✓ Routine cleaning of patient's rooms
 - ✓ Patient's common areas
 - ✓ Washrooms
 - ✓ OT
 - ✓ Laboratory
 - ✓ Consultant's office
 - ✓ Glass windows and doors
 - ✓ Ceiling etc.
- Handling of biomedical waste.
- Pest control-It includes spraying every 24 hours for mosquitoes, cockroaches, flies, rats, lizards and termites.
- Garbage disposal-The housekeeping staff collects garbage bins existing inside the hospital premises and disposes the garbage at the designated area within the hospital, which is the biomedical waste room. The general waste is sold to the junk dealer and healthcare waste is handed over to government approved vendor "synergy waste management".
- Horticulture-It is responsible for maintenance of house plants & terrace gardens, flower arrangement during hospital functions.

The performance indicators are B.M.W color code compliance, B.M.W collection, pest control efficiency and sanitization of the hospital premises.

CLINICAL ADMINISTRATION SERVICES

STORES

Material stores functions in order to supply the right material in right quantities at the right time at the right price. The IP departments put up requests for the required materials by uploading indents in the HIS. The store manager raises a purchase order to be sent at the central procurement stores. The supplies received are inspected based on quantity and expiry in the incoming material inspection area. The items are stored as per the storage norms. Departmental issues are made for non – medical consumable as per requirement. Stock is reviewed periodically for non-moving items and short expiry items. Stock audits are carried out twice/year. Any variance is reported to the higher management. For inventory control, ABC and VED analysis is carried out. FIFO (first expiry first out) is followed. The staff includes:

- Assistant Manager
- Executive store
- Assistants
- 2 Health care assistants

The key performance indicators are no stock outs, zero errors in maintenance of accounts, zero error in billing processing maintain minimum inventory maximum efficiency, maintaining stores as per the NABH – ISO standards, submission of bills accounts within 4 working days, expired items on the shelves should be zero, minimize emergency purchase, TAT suture and lab kits (19 days), instruments (8 weeks) and other items (2 days)

LINEN AND LAUNDRY

The objective of linen and laundry is the availability of clean uniforms for patients and staff. Soiled linen when collected is kept in the dirty utility room in a hamper trolley. Infected linen is collected and put in a red bag at the source of generation. The red bag is sealed and labeled for infection. At the end of each shift, the dirty utility linen is carried in the hamper trolley to the collection room. At the collection point, it is segregated, counted and sent to the laundry for washing. The performance indicators are laundry pending, turnaround time for laundry cleaning, percentage discarded linen.

BIOMEDICAL ENGINEERING DEPARTMENT

The main objective of the department is to facilitate the usage of latest technologies in the diagnosis, treatment of care of patients. It is also responsible for proper usage and quality performance of these costly equipment and tools inside the hospital

The departments maintains an updated asset register of the hospital equipment, conduct daily rounds to ensure that the equipment is functioning smoothly, responsible for facilitation and identification of equipment requirements, planning technical comparison, ordering installation and deployment units and new projects, conduct regular preventive maintenance servicing for all the equipment at regular intervals, facilitating equipment replacements and condemnation, whenever required, conducting regular training programs for hospital staff, on usage of hospital equipment. The staff consists of HOD, 5 biomedical engineers and 2 biomedical technicians and 4 medical gas technicians.

FOOD AND BEVERAGES

The objectives of food and beverages department are to deliver healthy and nutritious meals coupled with a wonderful with a wonderful experience of hospitality services to all IP, OP and staff. The cafeteria is outsourced to java green. The main functions of the department are as follows:

- Impatient meal management
- Purchase of fruits, vegetables, milk, pulses, whole grain and other dietary consumables
- FIFO is followed

The purchased items are unloaded in the receiving area, where they are inspected and then washed with water and anti-bacterial liquid before bringing it in the kitchen premises. It is followed by storage of perishable and non-perishable items in refrigerator and dry storage area respectively. Diet planning and counseling is done by the dietician according to the patient's condition, food allergy and taste and general preference. The diet summary is handed over to the supervisor in the form of meal sheet cum ticket. According to this, the food is prepared and laid out on trays. The meals are served in the patient's room and clearance is carried out after 2 hours. Food/meal/diet for a patient admitted in the hospital is decided by the doctor admitting the patient depending on his/her medical condition.

On doctor's recommendations, the dieticians plan the meal that is best for the patient 'speedy recovery. The staff includes:

- Regional head of support function
- F&B managers cum chef
- Assistant manager F&B staff

SECURITY

Services rendered by security department are surveillance and patrolling of the infrastructure and material, access control (in restricted areas like IT, MRD, LSS, Mortuary, Pharmacy, Electric control panels), control of movement of traffic in premises, reception and conduct of visitors and attendants, assistance in fire control and emergency plan, vigilance and intelligence, liaison with sensitive areas, carry out verification, hold records, issue passes, and generate reports on security matters, it is equipped with modern equipment like CCTV's metal and explosive detectors, alarms, security, lighting and walkie-talkies, etc. the staff members are:

- HOD
- Senior officer
- Security supervisor
- Sr. security assistant
- Security guards

The performance indicators are TAT, theft percent, code related incidents.

ADMINISTRATIVE SERVICES

ADMISSION AND BILLING:

The admission and billing staff includes 1 H.O.D and 12 employees. The services offered by the department are registration of a new patient, booking/reservation –bed and O.T, admission, billing, discharge work.

Front office:

The front office is the first point of contact at KDAH .It is manned by duty manager, deputy duty manger and patient care executive and patient care coordinator. There are total 7 front offices in KDAH and there are 2 help desks.

Functions:

- Respond and answer telephone calls from patients and clients (call center).
- Registration of outpatients and executive health checkup patients for various investigations (registration counter).
- Admission, billing and discharge of in patients.
- Direct the patient and their relatives to the outpatient services and the inpatient wards (helpdesk and welcome desk).
- Report receiving and handling over to the patient (dispatch counter).

Third Party Administrator Desk:

TPA Staff includes one executive clinical administrator and 4-customer care officer.

Functions:

- Counseling
- Pre- Authorization
- Cashless admission
- Query Handling
- Final approval
- Maintain privacy and confidentiality

INFORMATION TECHNOLOGY DEPARTMENT

It is implied that there is central database for entire hospital. Services rendered by the IT department are as follows:

- IT support to location users for hardware and software as per SLA (service level agreement).
- Installation of new IT equipment.
- Helping biomedical department in configuring the medical equipment with HIS.
- Installation of appointment scheduling programs.

The IT staffs include:

- Chief information officer
- Manager IT
- Executive IT engineers

The performance indicators are calls resolutions within a time limit, strict data security, zero percent variance, in hardware and software variance, minimal occupational hazard and proper e-waste disposal.

ENGINEERING DEPARTMENT:

Engineering and maintenance department is manned for 24 hours for keeping round the clock vigil on proper functioning of plant engineering equipment coming under the purview of department. This covers maintenance of major supplies to the hospital such as power, water, which form the lifeline to the hospital's activities. The responsibilities of the department include operation and maintenance of plant equipment installed in the basement of main building and various other areas to support the normal functioning of the hospital and repair work of equipment related to the department's responsibility. The policy of the department is to serve well with safety and it time, continuous improvement, cost saving, optimum utilization of manpower and equipment, optimum utilization of inventory and teamwork.

The major engineering services are:

- Electrical power supply- normal and emergency.
- Air conditioning, ventilation and refrigeration.
- Steam and hot water supply.
- Water stations and cold-water supplies- filtration system.
- Medical gases supplies
- Fire detection alarms and fighting system.
- Internal and external plumbing system.
- Civil works- masonry, carpentry, glasswork, upholstery, painting etc.
- PNG and LPG supply
- Safety assessment of facilities.

MARKETING AND SALES:

Marketing and sales department is concerned with business development, branding, promotions and advertisement of KDAH healthcare services. Marketing deals with organizing health checkup camps and awareness talks for corporate or PSUs and RWA, designing all the brochures and signage, pitching referral sales from nearby general practitioners and nursing homes, liaison with TPAs and managing the international patients (medical tourism).

FINANCE:

The scope of services includes the entire hospital cash handling and cash disbursement in the form of salaries and vendor payment for stores, pharmacy and biomedical department. All the cash collected is deposited on daily basis of the bank. The TPA payment is collected through lump sum amount in the form of cheque at the end of the month. The staffs include:

- HOD
- Assistant Manager
- Senior executives
- Junior executives
- 2 cashiers

HUMAN RESOURCE DEPARTMENT:

The functions of HR department at KDA hospital are:

- Hiring
- Physician and nurse recruitment
- Employee orientation
- Personal management
- Benefits and compensation management
- Counseling
- Claims handling
- Training and performance monitoring
- Professional development programs
- State and federal regulations education
- Work place safety and sanitation
- Administration – employee meetings
- Staff morale and retention

Recruitment / selection:

- Identifying the key requirements areas (KRA)
- Drafting job description
- Recruitment through job portals and internal references
- Selection
- Medical examination of the candidate
- Offering letter to the selected ones

PURCHASE DEPARTMENT:

Purchasing department is responsible for the procurement of function of the hospital. The primary functions of the department are to:

1. Procure the rights and services from the right suppliers at the right time for the right place.
2. Receive, warehouse, issue & distribute stocks to hospital departments in accordance with KDH procedure.
3. Hospital users and clinicians actively participate in product evaluation processes. The purchasing department is actively involved in cost analysis and suppliers performance management. It is through all of these activities that the department manages the chain process.

QUALITY CONTROL DEPARTMENT

The Functions of the department are:

- To analyze patient feedback forms.
- To analyze different parameters from different departments and compare them.
- Infection control of the hospital.
- Induction and training of hospital staff.
- Accreditations (NABH, JCI).

This department also maintains few quality indicators for hospital:

- Medication Errors
- Return of patient within 72 hours.
- Return of patient to ICU within 48 hours.
- Return of patient to OT within 48 hours.
- Number of Needle sticks Injuries.
- Number of blood transfusion reaction.
- Number of Adverse Drug reaction.

STAFF:-

This department consists of 1 quality manager who reports directly to the director of hospital.

SUMMER TRAINING REPORT

AIM

- TO REDUCE NON PRODUCTIVE TIME IN OPERATION THEATRE

OBJECTIVES

- To find out possible problem areas in OT causing under-utilization.
- To find out time lag between surgeries in OT.
- To identify the reasons of delay of surgeries.

Research question

1. WHAT IS THE STANDARD NON-PRODUCTIVE TIME IN OPERATION THEATRE?
2. WHAT ARE THE REASONS OF INCREASE IN NON-PRODUCTIVE TIME IN OT?
3. HOW MANY CASES ARE MORE THAN THE STANDARD TIME?

Methodology:

RESEARCH AREA: Kokilaben Dhirubhai Ambani Hospital Mumbai.

RESEARCH DESIGN: A prospective, observational time motion study was conducted in the OT of Kokilaben Dhirubhai Ambani hospital & medical research institute from April 6, 2017 to May 17, 2017. Informed consent was not necessary because of the observational nature of the study. Patient care was not affected by the study.

SAMPLING SIZE: A sample size of 300 patients has been taken.

Inclusion criteria: - 5th Floor OT.

Exclusion criteria: - 3rd Floors OT.

SAMPLING TECHNIQUE: The technique used to collect data was simple Random sampling.

PROBLEM STATEMENT

1. SURGEONS COMING LATE
2. PATIENT SHIFTED LATE TO OT.
3. ANESTHETIST COMING L LATE.
4. OT NOT READY FOR THE NEXT CASE.

PROBLEM JUSTIFICATION

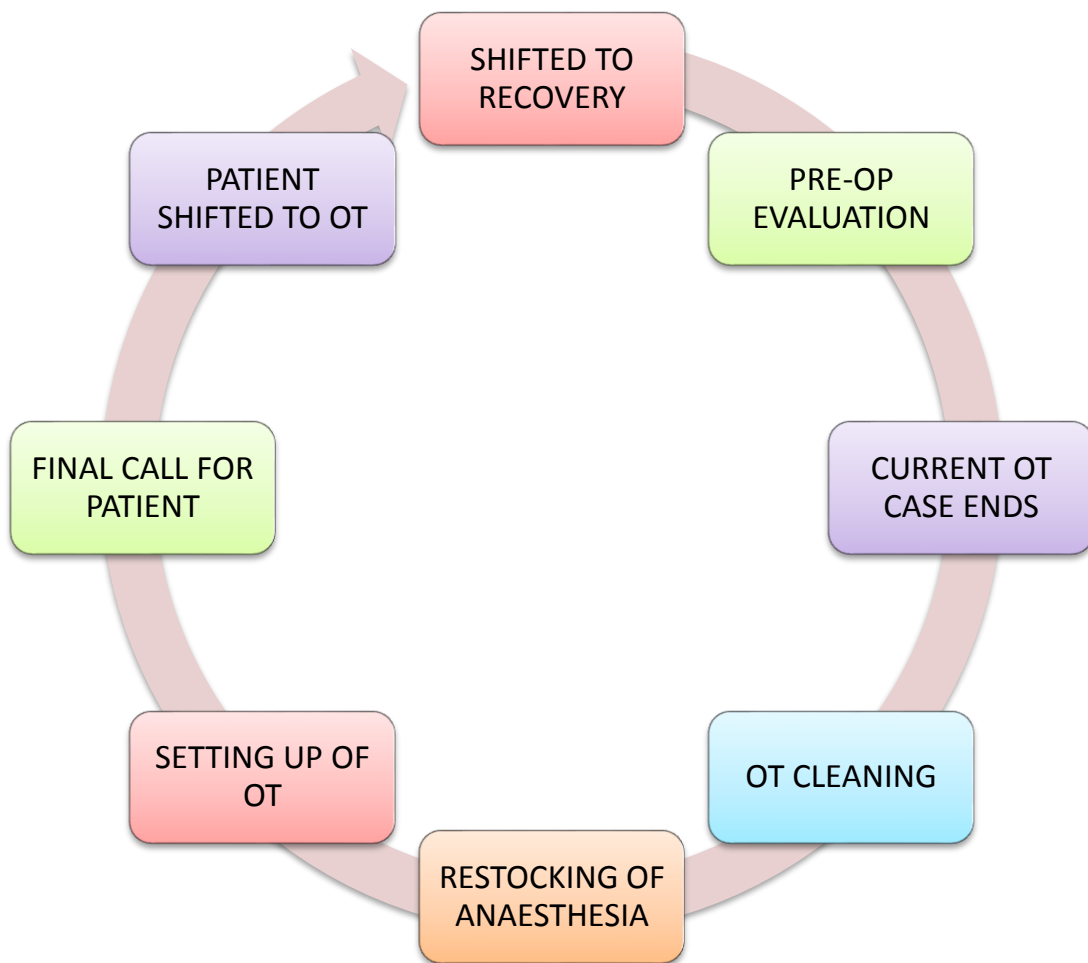
- Shifting time & shift-out time is huge which causes patient unrest.
- As surgeries got delaying, over-time increases. Involves extra payments & dissatisfaction among the staffs.

DMAIC

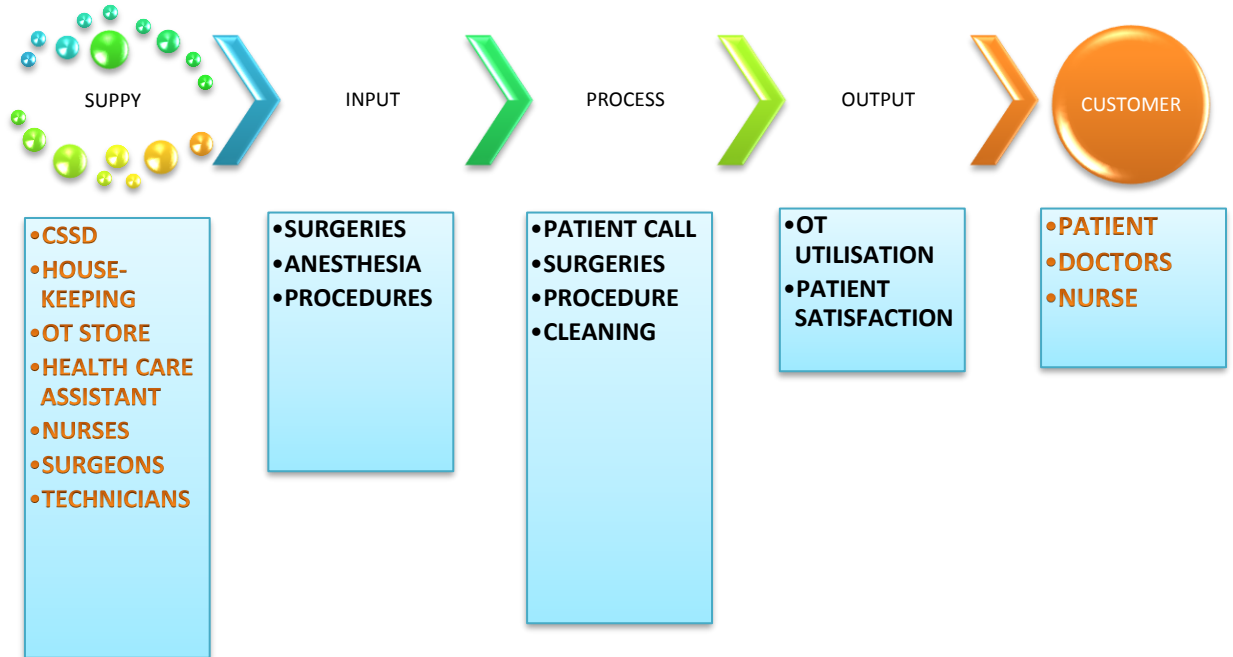
DEFINE PHASE

- ❖ NON-PRODUCTIVE TIME IN OT IS HIGH THAN THE DESIRED TIME.
- ❖ MOSTLY THE CASES ARE DELAYED DUE TO SURGEONS ARRIVE LATE.
- ❖ OT NOT READY WITH EQUIPMENTS AND CLEANING IS GOING ON.
- ❖ SOME TIMES PATIENTS ARE SHIFTE LATE DUE TO PENING REPORTS OR CONSENT OR CLEARANCE.
- ❖ WHICH LEADS TO NON-UTILISATION AND VACANT OT FOR LONGER PERIOD COMPARED TO EXPECTED TIME.

PROCESS FLOW



SIPOC



PROJECT CHARTER

Project Title: A six sigma approach to reduce Non – Productive Time In Operation Theatre			
Problem statement			Opportunity statement
➤ Scheduling of patients for OT ➤ REPORTS PENDING AND CLEARANCE ISSUES ➤ DOCTORS COMING LATE ➤ NON-PRODUCTIVE TIME IS HIGHER THAN STANDARDS.			➤ Number of patient is reduced because of earlier procedures delayed. ➤ Sometimes OT remains vacant due to Cleaning. ➤ Loss of revenue ➤ Dissatisfied customer
Goal Statement			Project scope
Current Level	Goal/Target	Target Date	Process under improvement: Starts with: 6.04.17 Ends with :07.05.17
31.08 minute	20 minute	5.05.17	
Project Plan			
Phase	Start	End	Remarks
Define	06.04.17	05.05.17	Completed within time
Measure	06.05.17	07.05.15	Completed within time
Analyse	8.05.17	10.05.17	Completed within time
Improve			Limitation of the study
Control			Limitation of the study

MEASUREMENT PHASE

Data measurement plan:

Process/Input	Data source & Location	Sample size	Who will collect the data	Data collection	How will be data collected	Other data that should be collected at the same time
NON- PRODUVTIVE TIME IN OT	5TH FLOOR OT of KDAH	300	POULAMI PAUL	06.04. 17 to 7.05.1 7	Manual	None

Data collection procedure :

SL. NO	DATE	OT NO.	UHID	SURGEON	IN TIME	OUT TIME	NPT	OPPORTUNITIES
1	6-Apr	1	513051	DR. SEEMA BEHL	8:45	9:20	0:45	SURGEON LATE
2		1	512952	DR. SEEMA BEHL	9:30	9:50	0:10	
3		1	133396	DR. SEEMA BEHL	10:00	10:30	0:10	
4		1	360254	DR. NIREN DONGRE	12:25	15:20	2:00	SURGEON LATE
5		1	513092	DR. RAJESH MISTRY	17:35	18:35	2:15	SURGEON LATE
6		2	83225	DR. BEJOY ABRAHM	12:35	13:15	3:35	OT CLEANING
7		2	474251	DR. ATTAR ISMAIL	14:20	14:45	1:05	SURGEON LATE
8	11-Apr	1	379660	DR. SEEMA BEHL	9:00	9:30	0:30	SURGEON LATE
9		1	115525	DR. SEEMA BEHL	9:40	10:10	0:10	
10		1	488973	DR. SEEMA BEHL	10:25	11:00	0:15	OT CLEANING
11		1	420941	DR. SEEMA BEHL	11:10	11:40	0:10	
12		1	488577	DR. SEEMA BEHL	11:50	12:25	0:10	
13		1	184623	DR. NIREN DONGRE	13:00	13:20	0:35	SURGEON LATE
14		1	30910	DR. NIREN DONGRE	13:35	13:55	0:15	OT CLEANING
15		1	425446	DR. NIREN DONGRE	14:05	14:25	0:10	
16		1	514750	DR. ANURADHA RAO	15:15	16:15	0:50	
17		2	515744	DR. BEJOY ABRAHM	8:35	10:55	0:35	SURGEON LATE
18		2	334335	DR. BEJOY ABRAHM	11:20	13:15	0:25	OT CLEANING
19		2	463961	DR. BEJOY ABRAHM	13:35	14:25	0:20	
20		2	515021	DR. SANJAY PANDEY	15:45	20:45	0:25	SURGEON LATE
21		3	143462	DR. RAJENDRA SONAWANE	8:15	11:55	0:15	
22		3	377978	DR. RAJENDRA SONAWANE	12:35	14:35	0:40	SURGEON LATE
23		3	515476	DR. RAJENDRA SONAWANE	14:55	16:45	0:10	
24		4	73007	DR. RAJESH MISTRY	8:35	13:45	0:35	SURGEON LATE

Data measurement chart:

MEASUREMENTS	MINUTES	MEAN	UCL (3 σ)	LCL (3 σ)
0:45	45	30.9	118.1875	1.80862
0:10	10	30.9	118.1841	1.805287
0:10	10	30.9	118.1841	1.805287
2:00	120	30.9	118.1841	1.805287
2:15	135	30.9	118.1841	1.805287
3:35	195	30.9	118.1841	1.805287
1:05	65	30.9	118.1841	1.805287
0:30	30	30.9	118.1841	1.805287
0:10	10	30.9	118.1841	1.805287
0:15	15	30.9	118.1841	1.805287
0:10	10	30.9	118.1841	1.805287
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0:15	15	30.9	118.1841	1.805287
0:40	40	30.9	118.1841	1.805287
0:10	10	30.9	118.1841	1.805287
0:35	35	30.9	118.1841	1.805287
0:10	10	30.9	118.1841	1.805287
0:45	45	30.9	118.1841	1.805287
0:50	50	30.9	118.1841	1.805287

DATA SUMMERISATION

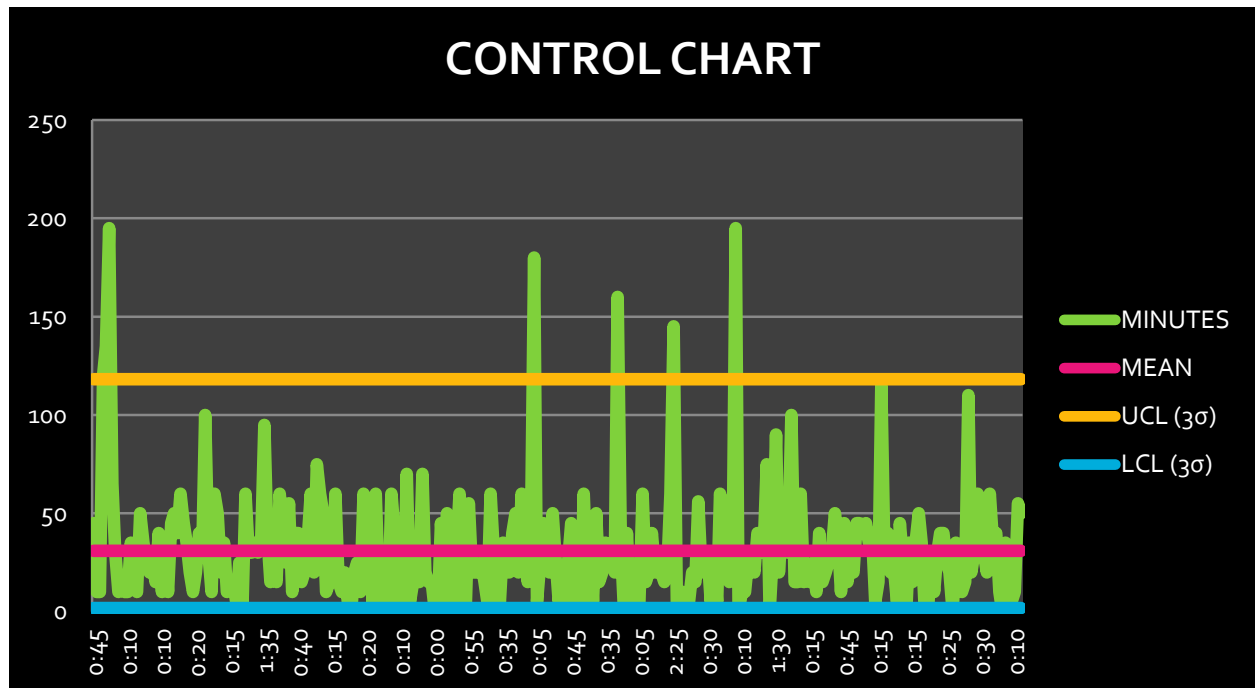
FOR CONTINIOUS (X)

Output indicator	Average	Standard deviation	CP
X1	30.58	29.09	4.12
			CP<1 indicates the process variation is less than the tolerance.

For Discrete (x)

Output indicator	No. of. units	No. of opportunities/unit	No of defects	DPMO	SIGMA LEVEL
X1	300	4	153	127500	2.64

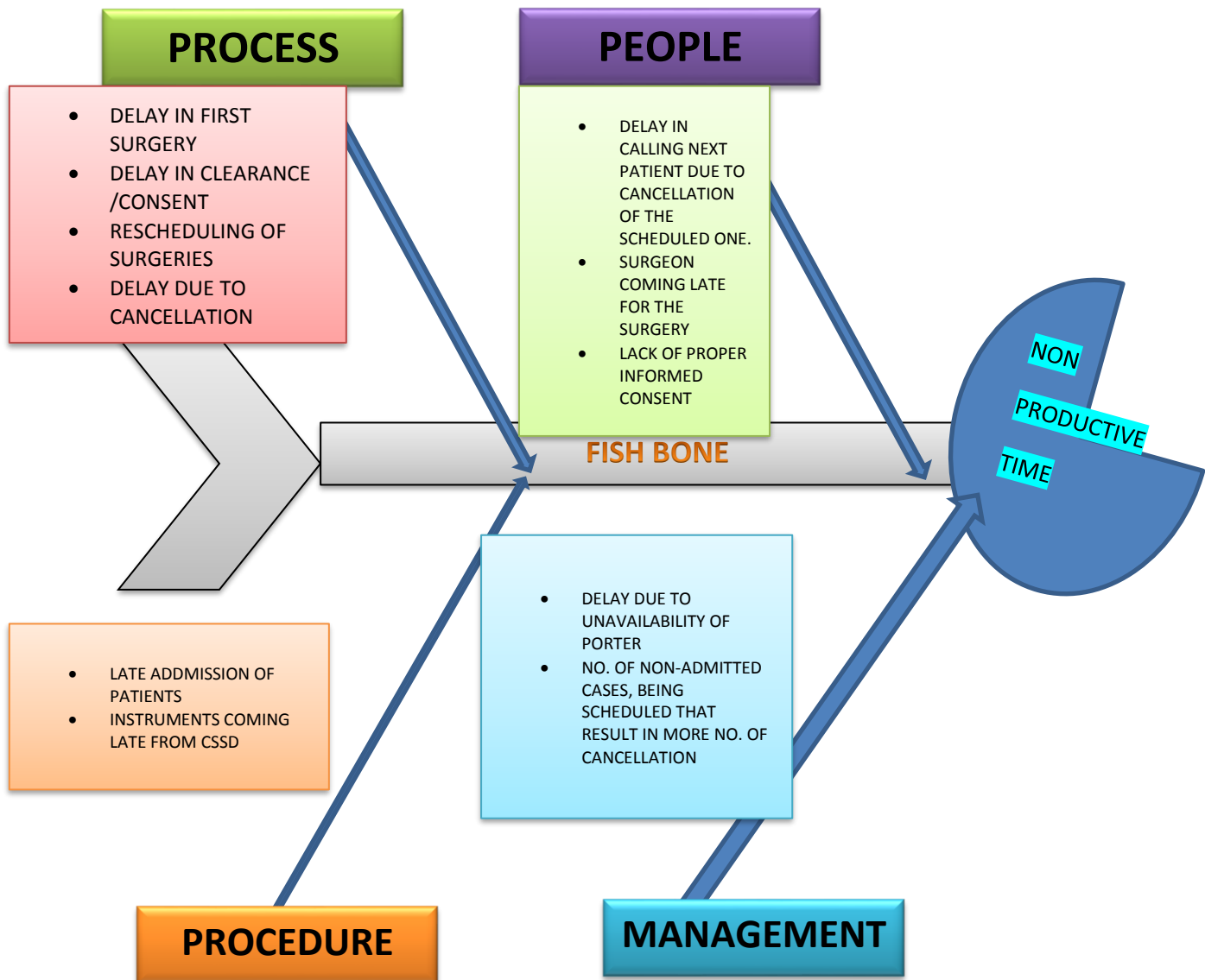
CONTROL CHART



ROOT CAUSE ANALYSIS



FISH BONE ANALYSIS



ANALYSIS

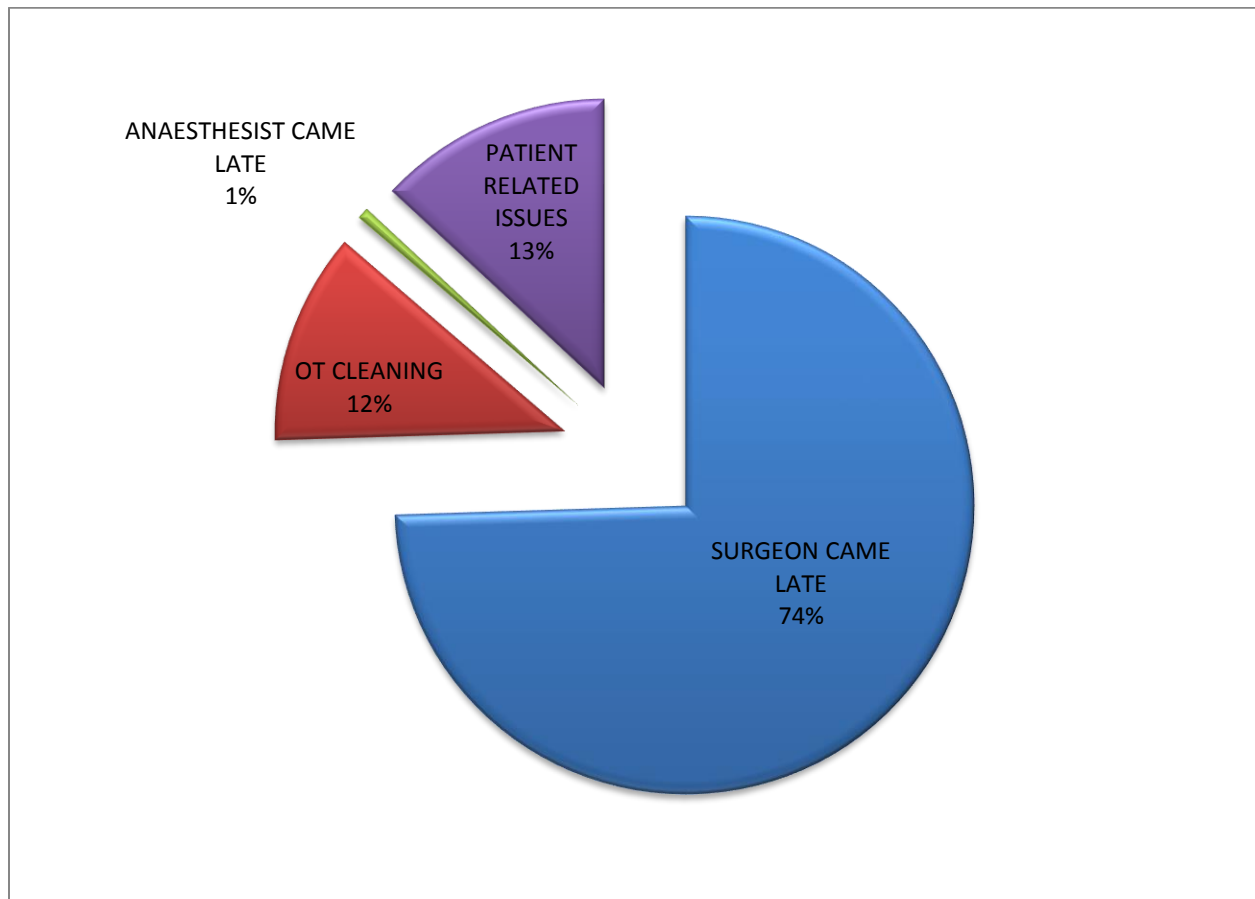
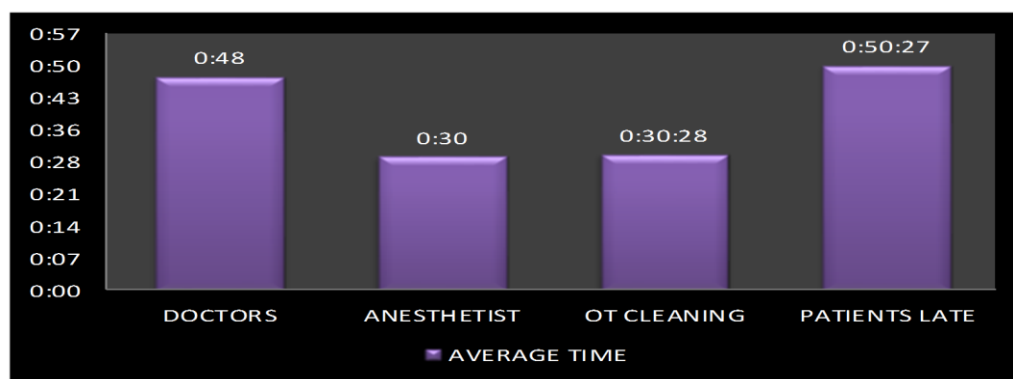


FIG : RESPONSIBLE PERSON FOR DELAY

FIG : AVERAGE TIME TAKEN FOR DELAY



RECOMMENDATION

At the end of project findings, probable reasons of delay and solution are listed down. In this DMAIC approach improvement and control portion is excluded.

- Confirmation calls should be made before the day of procedure.
- Clearance time should be reduced.
- Pre-Op evaluation reports should be ready beforehand.
- Vending machines should be placed in the protective zone for refreshments.
- Scheduling of OTs should be done according to the time table of doctors.